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DESIGN PROBLEMS-ALAMITOS BAY MARINA

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WATERWAYS DIVISION

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DESIGN PROBLEMS—ALAMITOS BAY MARINA

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There has been a great need for additional small craft harbors for the past decade along the Pacific Coast and particularly on the California Coast. From information derived from the County Assessor Offices and other Public Agencies approximately 100,000 pleasure boats are now being accommodated on the Pacific Coast, 45,000 in the Puget Sound Area, 15,000 on the Oregon Coast and 40,000 along the California coast.

Practically all of the existing small craft boat anchorages on the California coast are filled to capacity and boat owners seeking moorings are being constantly turned away due to lack of facilities. Furthermore some of the commercial ports such as Los Angeles and Long Beach Harbors will soon have to eliminate some of the existing anchorages to accommodate the expansion of harbor facilities for deep water shipping. There is also evidence of numerous prospective pleasure boat owners awaiting proper mooring facilities before purchasing boats.

The Alamitos Bay Marina which has been contemplated for many years and now under construction will relieve this situation to some extent and it is expected that this Marina will be filled to capacity shortly after it is completed. See Figure 1, Comprehensive Plan—Alamitos Bay Marina.

Chain of Small Boat Harbors

Beside the existing Marinas and small craft harbors situated at the Port of San Diego, Mission Bay-San Diego, Newport Beach, Long Beach and Los Angeles Harbors, Redondo Beach, Santa Monica, Santa Barbara and the San Francisco Bay area there are a number of additional ones either building or in the preliminary stage of development. The latter include Carlsbad, Oceanside, Dana Point, Alamitos Bay Marina, Cabrillo Marina, Marina Del Rey, Point Dume, Ventura, Avila and Morro Bay, California. South of Point Conception a much greater proportion of calm weather prevails and even in winter severe storms are infrequent. It is along this portion of the coast from Santa Barbara to San Diego that the greatest concentration of population is found and also the least opportunity for the use of inland lakes or rivers. It is therefore not surprising that the small boat harbors projected in this coastal area are on a relatively large scale with special emphasis on recreational activities. When this chain of small boat harbors is completed it will greatly stimulate boat ownership since these pleasure seekers will have available safe anchorages for voyages along the coast as well as trips to the offshore islands.

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Proponents and Developers

The Shoreline Committee of the Long Beach Chamber of Commerce with many boat owners included in its membership worked for many years in behalf of the Alamitos Bay Marina project and were largely instrumental in obtaining a favorable vote of almost 2:1 from the electorate to expend \$10,000,000.00 from the City's tideland oil fund for the construction of the Alamitos Bay project.

It is being developed under the direction of the City of Long Beach through their City Manager, Samuel E. Vickers, City Engineer Jess D. Gilkerson and the City Council.

Three Long Beach consulting firms, namely, Moffatt & Nichol, J.W.B. Blackman and the writer consolidated their interests in submitting a proposal for the engineering work involved and were retained by the City to make a model study, comprehensive plan and detailed report, prepare plans and specifications and provide supervisory inspection service for the construction work including jetties, dredging, slope rock protection, concrete wall around perimeter of boat basins, float mooring facilities with utilities, fueling barges, boat repair yard, launching facilities, etc.—all estimated at approximately \$8,000,000.00. The remaining \$2,000,000.00 will be expended by the City for land purchase, perimeter road, parking areas, shore utility services, rest rooms, lessee offices, marine supply stores, lunch rooms, landscaping, etc.

A six lane bridge, named the J.H. Davies bridge, is now being built under a separate bond issue over the east end of the Marine Stadium with a vertical clearance of 30 feet at high tide and will be a connecting highway line in the Marina Project accommodating traffic between Seal Beach and Long Beach as well as traffic to and from the Pacific Coast Highway.

General Location

The general location of the Marina is at the extreme east end of Long Beach and adjoining the San Gabriel Flood Control Channel and the City of Seal Beach. It is approximately 28 miles southeast of the center of Los Angeles and 17 miles west of the Newport Beach resort city where 3,000 pleasure craft are accommodated.

The Alamitos Bay area now consists of a small inner bay and waterway connecting it with a marine stadium 2,200 feet in length where speed boat and crew races are held. A highly developed residential area known as "Naples" is in the center of these water courses and will be entirely surrounded with water areas when the Marina is completed.

Federal Participation

Although this Marina Project was high on the priority list of the U.S. Army Corps of Engineers and Federal participation would have included Federal funds of approximately \$2,500,000.00 for the construction of two rock jetties and the dredging of the entrance channel and a portion of the inner bay, the City of Long Beach officials decided to build the project without Federal financial assistance. This was possible because the City had the funds available and Federal participation would have resulted in a delay in starting the project of two to three years and possibly longer.

Original Plans

An original tentative plan was undertaken by the Long Beach City Planning Commission which called for the extension of the then existing short jetties to a depth of 16 feet below M.L.L.W. with an entrance channel dredged to -15 feet. The proposed inner harbor development under this plan consisted of five boat basins and one repair or service basin separated by five solid filled moles. The U.S. Army Corps of Engineers in their study of the project more or less followed this same general plan and recommended approval in their report dated August 20, 1951 which was a review of a previous report of 1942.

Limitations

The improvement of this Bay area into a successful pleasure boat harbor involved the consideration of the existing improvements and also the limitations imposed by natural boundaries. The existing entrance channel into the Bay is hazardous to navigation and soon will be deepened and protected from ground swells, storm wave action and silting. Also the control and circulation of water currents within the bay and the proposed basin areas caused by tidal action and the effect of the prevailing southwesterly winds and those from the northwest had to be studied. On account of the submarine topography and harbor configuration being irregular it was concluded that a model study was the only practical method for this investigation.

Model Study

A model site of approximately 2,700 square feet was selected at the northwest end of the Marine Stadium and a grid system corresponding to the system used in the field surveys was laid out on a wood border surrounding the model site which served as a tie between the field data and the construction of the model. A horizontal scale of 300:1 was used while the vertical scale factor was 10:1.

After the field surveys were plotted on a scale of one inch to 200 feet in the office the sheets were reproduced and enlarged in a ratio of 8:1 and these prints were stapled to large sheets of Celo-tex which were laid out on the model site to conform to the existing coordinate grid system. Standard 18 inch straw nails were then driven through the Celo-tex into the ground and the nail heads set to the correct elevations with a surveyor's level. The whole model area was then graded with earth fill to an elevation about two inches below the nail heads and the latter space was filled with Portland cement concrete conforming to the contours indicated by the straw nail heads.

Since we were mainly interested in the effect of currents caused by tidal action equipment was installed for the reproduction of tides. A stilling basin 2-1/2 feet square was sunk below the level of the ocean basin of the model from which a six inch diameter steel pipe was run to an outlet into the Marine Stadium. The outflow from this pipe was controlled by a six inch air operated modulating valve with pilot valve control. A 250 g.p.m. centrifugal pump powered by a 2-1/2 h.p. motor was used to pump water through a four inch diameter steel pipe from the Marine Stadium into the six inch line above the modulating valve. A standard 1/4 h.p. air compressor unit was used to furnish the air supply to operate the level control apparatus and the six inch control valve. Any type of tide could be produced by cutting a cam to fit the desired conditions.

Standard one inch diameter plastic reflectors as are found in most highway signs were used as floats and found very satisfactory as they had a very high level of light reflection, were not damaged by sea water and would float just at the surface of the water.

Photographs of the tidal action were taken in the evening after dusk when the wind was negligible from an overhead cantilevered platform above the model while simultaneously plots of the float movements were being made by direct observation from the ground.

Many mooring basin arrangements were tested and it was found that due to the low current velocities which caused stagnation and fouling it was necessary to eliminate nearly all of the earth filled moles. These moles divided the mooring area into relatively small individual basins as shown in the previous reports on the Alamitos Bay Marina. One mole was retained which will serve the fuel barges located outside boat mooring basin No. 1. It was also decided to provide a concrete sheet pile baffle wall at the easterly end of the Marine Stadium to protect the berthing facilities in Basins 2 and 3 from wave action caused by northwesterly and southwesterly winds.

Inspection of U.S. and Canadian Facilities

Prior to and during the planning and construction studies of the Marina inspections were made of many Marinas and pleasure boat anchorages around the coastline of the United States, British Columbia and the Great Lakes. The subject of most interest was the matter of pontoons used for floating moorings which are the foundation for the float facilities. In the Great Lakes with its water elevation variance of a few inches and Florida's tidal range of approximately 18 inches piled wharves are used. On the North Atlantic coast with about the same tidal range as the California coast there are numerous small anchorages but the boats are moored to buoys in the open and stored on shore in the winter. Only on the Pacific Coast are mooring floats used extensively.

Entrance Jetties

The rock jetties 600 feet apart protecting the entrance channel to the harbor have been 99 per cent completed. They are 3,300 feet in length from the inshore end and the outer extremities of jetties are in approximately -20' of water. The top width of the West Jetty is 14' while the East Jetty was made 16' due to the greater exposure to ground swells and southeastern storms. Construction of a core impervious to penetration by water borne silt and sand up to high tide or plus 7 was considered necessary to prevent material carried by littoral drift along the shoreline and flood flows from the San Gabriel River Flood Control Channel from filtering through the jetties into the entrance channel. This core is protected by class C, B and A armor rock, the latter weighing up to 20 tons. The cost of these jetties is \$1,769,349.00.

The entrance channel will be dredged to -20' for a distance of 1000' from the ends of jetties and from that point including the inner bay area and the 500' channel serving the boat basins the dredged depth will be -15'. The outer area of Basin 1 will be dredged to -15' to accommodate sailing craft while the inner area of this Basin will have a -12' depth for large sized motor boats. The remaining Basins 2, 3 and 4 will be dredged to -10' for medium and small sized motor boats.

Wave Action at Entrance Channel

Swells from storms in the North Pacific approach from the West but due to the offshore Long Beach breakwater protection their force is dissipated resulting in minor waves at the entrance channel. Ground swells caused by tropical storms 2,000 to 3,000 miles from this coast occur less frequently but approach from the less protected southerly direction. The maximum deep water wave height to be expected from these storms is 4 to 5 feet because of the great distance required to reach this coast. Since the wave period is normally between 15 and 20 seconds and the depth of water in which breakers will occur under this condition is 11 feet, no breakers should occur in the entrance channel from this source.

Waves from severe southeasterly storms which are accompanied by high winds in the local area may cause breakers to occur in the entrance channel but these storms are very rare so the use of the entrance channel will only be restricted during a very small percentage of time and it is not expected that boats will be using the entrance channel under those conditions.

Littoral Drift

Due to the configuration of the shoreline and the protection afforded by the existing offshore Long Beach breakwater the angle of incidence of the waves reaching shore cause a littoral drift up the coast. This occurs from the West Anaheim Bay jetty, which protects the entrance to the Navy Ammunition and Net Depot Harbor, to the mouth of the San Gabriel Flood Control Channel. A similar up coast or westerly sand drift occurs between the West Jetty of the Alamitos Channel and the Rainbow Pier Breakwater. These drifts cause erosion along the Seal Beach shoreline and the east end of the Long Beach shoreline. However this condition will be alleviated since 500,000 cu. yds. of material from Alamitos Bay will be discharged at the east end of the Seal Beach shoreline and approximately 4,000,000 cu. yds. will be pumped along the Long Beach shoreline up coast from the West Jetty. Furthermore when the offshore Breakwater Extension which is an approved project is constructed down the coast the beaches of both Seal Beach and Long Beach will be stabilized.

Silt carried by the San Gabriel River Flood Control Channel during storm periods can be expected to be minor in view of the recent construction of check dams on this watershed and due to the fact that these sand deposits will have to be dredged in the future to replace eroded sand along Seal Beach.

Removal of Bridges and Perimeter Road

The existing Ocean Avenue Bridge crossing the main entrance channel to the Marina forms an obstruction to navigation and must be removed. To supplant this highway artery the Marine Stadium Bridge and the section of the Pacific Coast Highway between bridge approach and Seal Beach will accommodate the flow of traffic between Seal Beach and Belmont Shore and Long Beach proper at only a slight increase in distance and travel time.

A four lane Perimeter Road around the boat mooring area will be provided for easy access to the parking areas and boat berths with limited through traffic between Seal Beach and Long Beach. Also the Second Street Bridge at the east end of Naples will be removed since it will not be needed in the future as this portion of Second Street will be eliminated by the enlargement of the Bay by dredging.



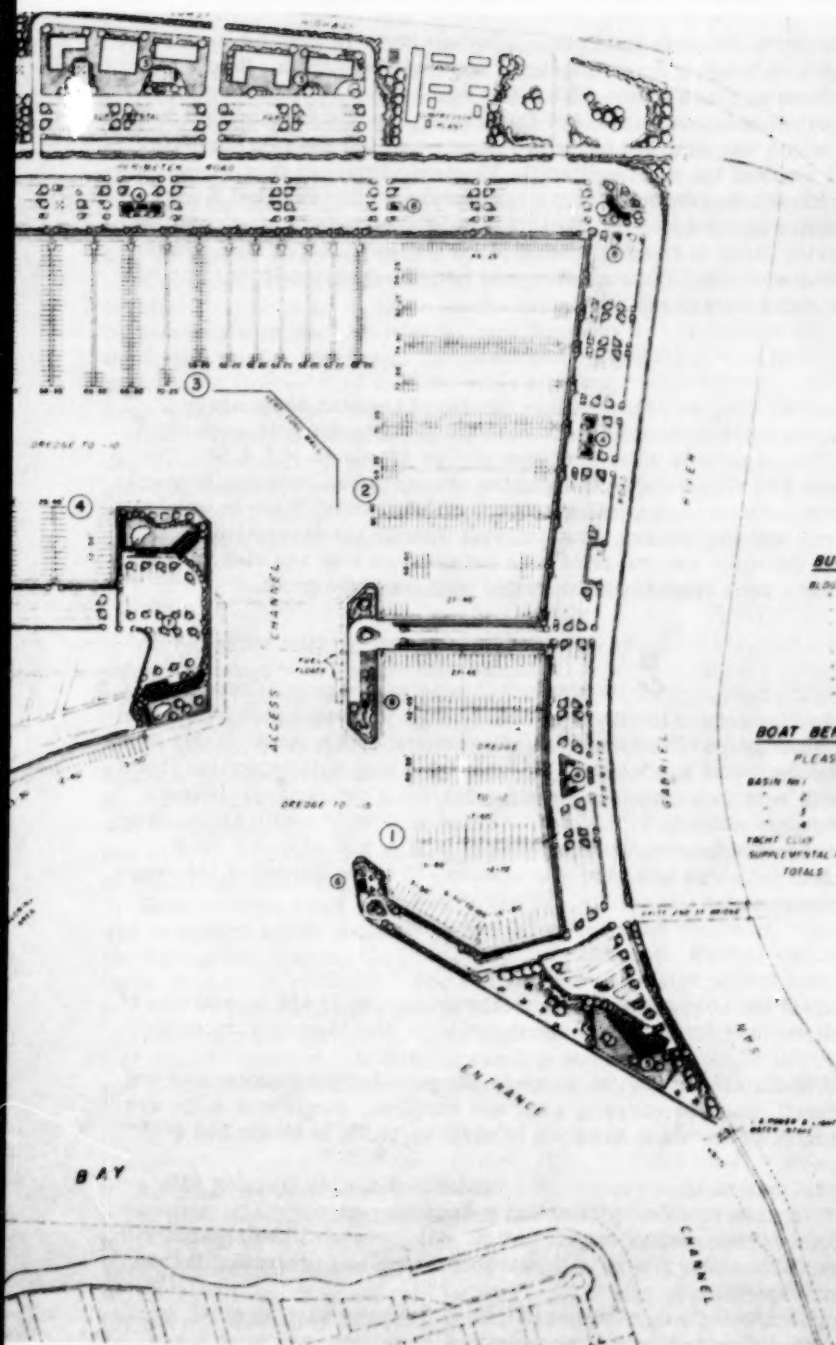
COMPREHENSIVE PLAN

ALAMITOS BAY MARINA

LONG BEACH, CALIFORNIA

SCALE OF FEET
0 500 1000

ALAMITOS



BUILDING LEGEND

- BLDG NO. 1 ADMINISTRATION BLDG
 2 SERVICE & REPAIR
 3 COMMERCIAL AREA
 4 OFFICE, COMFORT STATION
 5 CONCESSION
 6 RESTAURANT
 7 ASST. HARBOR MASTER
 8 YACHT CLUB AREA
 9 COMFORT STATIONS

BOAT BERTHS & PARKING

	PLEASURE BOATS	AUTOS
BASIN NO. 1	166	410
" 2	626	699
" 3	768	800
" 4	276	900
YACHT CLUB	40	250
SUPPLEMENTAL PARKING		400
TOTALS	1,876	2,859

Relocation of Pacific Electric Railway

It is necessary to relocate the Pacific Electric Railway, which now crosses about the center of Project, to an alignment north of the Marina. Since they own their right of way it has been difficult to reach an agreement for a location satisfactory to all concerned. For this reason the contract for Unit 2 construction which was awarded early in January was limited to a northern boundary just south of the existing Pacific Electric. However it is expected that this matter will be composed in the near future so that the Unit 3 construction, which will complete the Project, can be contracted for. Consideration is also being given to the elimination of the Pacific Electric entirely in the Marina area and serving the existing and future industries from their line located about four miles to the north.

Rock Rip Rapped Slopes

The shoreline facing on Alamitos Bay outside of the boat basin areas where exposed to wave action and currents will be protected with rock rip rap on a 2-1/2:1 slope with a top elevation of plus 13' above M.L.L.W. The rip rap section will consist of an 18" blanket of quarry run rock spalls overlain with a 2' blanket of rock varying between 200 lbs, and 1/2 ton in weight. The quarry run will prevent the travel of sand through the protective rock blanket and in the more critical tidal zone between low tide and plus 7.0 the face of the lower rock blanket will be coated with concrete grout.

Bulkheads

The bulkheads around the boat basins will consist of a gravity type nonreinforced mass concrete wall with a vertical face on the water side founded on wood batter piles spaced 6' on centers and protected with a gunite jacket to at least 4' below the top of earth slope. The concrete wall with expansion joints every 100' will rest on a rock mound with a 1-1/2:1 slope down to the rock rip rapped dredged slope of 2-1/2:1. The top of wall will be +10' giving convenient access to the floating berths. Back of wall is a 6' sidewalk from where a landscaped slope will rise to elevation +13 at the border of the roadway and parking area.

Boat Mooring Facilities

On account of the normal maximum tidal variation of 7' and an extreme of 9' float construction is the only practical means of providing boat mooring facilities.

The main floats are 9' in width which is adequate for the boat owners and passing of small carts for carrying gear and supplies. Single boat slips are formed by finger floats which are 3'4" in width up to 35' in length and 4'-4" over that length.

The general type of float construction consists of timber framing with planked deck of select lumber with bolted connections supported on pontoons with a freeboard of approximately 16 inches. All lumber will be treated with preservative salts giving it a good appearance as well as protecting it from dry rot and termite attack.

Consideration was given to several types of pontoons such as steel, lightweight concrete, styrofoam, fibre glass coated styrofoam, and fibre glass

plastic coated plywood boxes but they all have certain defects which results in a higher maintenance cost.

A reinforced fibre glass plastic molded pontoon with no other material in its construction was finally decided upon on account of its strength, light weight and imperviousness to salt water. The cost of this pontoon will be slightly higher but long life and freedom from maintenance are important factors in overall cost which will offset the initial investment.

Gunite jacketed wood piles with a smooth finish above extreme low water will hold the main and marginal floats in place and allow the floats to move vertically with the tide. The outboard end of all finger floats longer than 40' will be held in place and guided by creosoted piles.

A continuous Neoprene rubbing strip will be installed on the sides of the smaller boat slips up to 40' in length while the slips for the larger boats will be provided with Neoprene fender type bumpers at intervals along the side of the finger floats. Hardwood cleats will be provided for each berth to allow boats to be moored fore and aft. Also a plywood locker for storage of spare gear will be installed convenient to each boat.

Gangways from the land area are 30' long with a maximum slope of 17-1/2 degrees at extreme low tide. These will be spaced to allow direct access to all main and marginal floats. They will have a clear width of 4' and a deck live load of 75 lbs. per sq. ft. The handrail on gangways and on top of the bulkhead wall around perimeter of basins will be aluminum.

Auto Parking and Shore Buildings

An intensive study of auto parking, planting, boat basins, and road areas was undertaken with special effort made to achieve a balance between these activities. This determined the final location of the marginal bulkhead.

The roads consist of a four lane Perimeter Road connecting the Second Street Bridge over the San Gabriel Flood Control Channel with the Marine Stadium Bridge giving access between Seal Beach and Long Beach and also a means of entrance to the four two lane streets serving the auto parking areas and the waterfront. The capacity of 3,075 auto parking was based on an average of approximately 1-1/2 cars per boat with added space for unloading autos at each float gangway.

Shore buildings are proposed in the general overall comprehensive plan and consist of a City Administrative Office Building centrally located to all the Basins and housing the General Manager, Harbor Master and Staff; a large first class restaurant south of Basin 1 with an excellent view of the harbor and entrance channel; groups of buildings centrally located with respect to each basin consisting of lessee's offices, marine supply store, lunch room and comfort stations. Additional comfort stations and public telephone booths are located near the shore end of gangways serving the float facilities.

Private Yacht Clubs

An area has been reserved for the location of two existing local yacht clubs near the end of Appian Way on the west side of the Marina Access Channel. The more northerly portion of this area will be reserved for the Long Beach Yacht Club whose members consist primarily of power boat owners and will have the use of Basin 4. The southerly portion of area will be reserved for the Alamitos Bay Yacht Club whose members consist primarily of owners of sailing craft and their berthing facilities will be located along the marginal

bulkhead between Second Street and the yacht club area.

The above areas will be leased on a long term basis to the yacht clubs and the latter will construct the clubhouses and other improvements required.

The existing Alamitos Bay Yacht Club site on the south side of channel connecting harbor with the Marine Stadium will be retained and improved with a wider shore land area paved for the storage of the small sailing craft.

Fueling Facilities

Two reinforced concrete gunite fueling barges 20 feet wide and 80' long will be built by the City and leased to private oil companies. They will be located on the access channel side of the mole at the northwest corner of Basin 1 thus reducing the fire hazard to a minimum. Space is also reserved for a third fueling barge if needed in the future.

The barges will be equipped with fueling facilities for two types of gasoline, one type of diesel fuel and lubricating oils dispensed by conventional nozzle equipped rubber hoses and meters.

Underground fuel storage tanks will be provided by the lessee on shore where they can be filled by tank trucks. Pumps will be located adjacent to the tanks with remote stop-start control at the dispensing points on the barges.

Boat Repair Area

A boat repair area site along the east side of north approach to the Marine Stadium Bridge has been designated in the comprehensive plan for this important facility which will accommodate all of the Marina boats 60' in length and under and such visiting pleasure boats that will need repair.

The average time a boat will spend in the yard for annual maintenance is estimated at one week and for major repairs three weeks at four year intervals. Considering a total of about 2,000 boats to be accommodated by the boat repair yard regular repairs will require a work area capacity for approximately 67 boats. If an additional 10 per cent capacity for emergency repairs is allowed a total capacity of 74 is required.

In conjunction with the repair concession, storage for boats of lengths under 30' on which owners prefer to do their own work is contemplated. An additional storage capacity of 25 spaces accessible to the marine hoist facilities will be provided for this work and a small rental charge will be made by the lessee for this service. This will bring the total storage up to about 100 boats and a weekly haulout rate of approximately 45 boats.

Two vertical lift elevators, one for 20' boats and under and the other for 20' to 60' boats, will be installed by the City and the yard site will be leased to the highest and most responsible bidder on the allowable 40 year term basis. This will assure having a well operated boat repair yard and maximum revenue to the City. The lessee will be required to furnish the shore facilities such as rail lines, wheeled boat cradles, shop facilities, etc.

Launching Facilities

A concrete launching ramp for launching small boats carried on private trailers will be provided on the north shore of the Marine Stadium just west of the new Marine Stadium Bridge. Also a 5 ton crane type launching facility will be installed west of Boat Basin 4 on south side of Marine Stadium for

launching small boats carried on trailers. These two launching sites will have adequate parking facilities for both autos and trailers.

Quantities of Major Items of Construction

It may be of interest to know the extent of the various items of construction. The following is a list of the principal items together with the unit of measurement and total quantity:

ITEM	UNIT	TOTAL
Dredging	cu. yds.	5,052,000
Jetty Rock	tons	473,800
Rip Rapped Slopes	lin. ft.	3,000
Concrete Bulkheads	lin. ft.	12,590
Main & Finger Floats	lin. ft.	79,450
Pontoons	number	6,721
Aluminum Handrail	lin. ft.	14,670
Piles	number	1,278

Contracts have been awarded for the first two units of construction amounting to \$4,024,394.00. The third unit comprising the remainder of Marina is estimated at \$3,930,606.00 making a total of \$7,955,000 which is \$34,500 over the original total estimated cost. However it is very probable that the low bid on third unit will be lower than the above estimate which will bring the total cost below the original total estimate.

Beautification and Landscaping

It is important that the entire Marina development present not only an excellent facility to serve the strictly utilitarian needs of the boat owners but that it shall in addition be outstandingly attractive to the boat owners and the visitor as well.

With this in mind every possible available location in the development of the general comprehensive plan has been set aside for landscaping. The sloped area 10 feet in width between the sidewalk behind the bulkhead wall forming the perimeter of the boat basins and the roadway and auto parking area is devoted entirely to strip planting. Supplementing this is row type planting including trees bounding the two way access roads to parking bays and at the crosswalks while landscaped observation terraces are located on either side of the shore end of float gangways. Also the triangular areas between parking bays and the perimeter road as well as Appian Way when landscaped will act as a screen along the full length of this four lane highway. In addition a vine-covered fence type separation has been recommended for the east and north side of the perimeter road to shield the San Gabriel Flood Control Channel and Pacific Electric Railway from the Marina Area.

Operation of Boat Anchorages

The Alamitos Bay Marina as planned is divided into four boat anchorage basins each with a centrally located group of buildings for administration and other purposes. From past experience in various methods of operation it has been recommended that competitive bids on a long term basis be obtained under a specification that would assure the most successful operation. The revenue to the City is to be based on a percentage of the gross revenue received by the lessee. The bidder offering the highest percentage would be the successful bidder providing he meets all the contract requirements and is experienced and responsible.

There is considerable evidence to prove that this method of operation is far superior to municipal operation under civil service requiring a three shift operation. This would also practically eliminate the introduction of political pressure by boat owners to obtain preferred anchorage locations and other favors.

Future Expansion

During the course of the comprehensive plan study it became apparent that some consideration should be given at this time to the possible future expansion of this project. Three locations adjacent to the present Marina development were finally selected as being the most desirable from the standpoint of location and economy.

The first designated as Boat Basin A is located just west of the West Jetty with an opening for its entrance through this jetty. The area within would be dredged and the material deposited to form a land strip around the basin protected on the outside with sealed rock rip rap and a concrete bulkhead on the inside. This strip would be treated similar to the shore areas around basins in the present development and used for roads and auto parking. This basin location near the entrance would be advantageous for large pleasure boats, the total capacity being 700 boats of average length of 50 feet and it is a logical first extension because no property acquisition is necessary.

Future Boat Basin B is a dredged channel along the northeast side of the Marine Stadium and separated from the latter with a concrete bulkhead. This basin with the moorings on land side and openings at each end of bulkhead for access is estimated to accommodate 1,000 pleasure craft with average length of 20 feet.

Future Boat Basin C is located northeast of the Marina proper and requires the rerouting of the Pacific Coast Highway which is feasible. On account of land acquisition and highway realignments this extension should follow Basins A and B. When completed Basin C will accommodate 1800 additional boats of average length of 35 feet with ample space for navigation of boats.

The above three extensions together with the 1,278 boats to be provided for in Marina now under construction will accommodate a total of about 5,400 boats.

A recommendation has been submitted in report urging the City to purchase the property required exclusive of the mineral rights, for Basins B and C and also to revise the zoning ordinance governing this area to prevent any further oil drilling. This land purchase was urged to be done at an early date before adjoining land values increase to any extent as a result of the present Marina development.

In conclusion it is believed that the Alamitos Bay Marina will be a very important link in the chain of small craft anchorages, that are now proposed along the California coast. When completed it will stimulate the development of similar projects which are so urgently needed to provide the necessary recreational facilities for the fast growing population in this state and particularly Southern California.

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